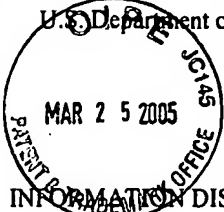


3-25-05

Sheet 1 of 5

 <p>U.S. Department of Commerce, Patent and Trademark Office</p> <p>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</p> <p>(Use several sheets if necessary)</p>	Application No.:	10/813,407
	Filing Date:	March 29, 2004
	First Named Inventor:	Jiping Li
	Group Art Unit:	2811 2822
	Examiner Name:	Unknown
	Confirmation No.:	5642
	Attorney Docket No.:	BOX016 US

U.S. Patent Documents

*Examiner Initials		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
MT	1.	6,489,801	12/3/02	Borden et al.	324	766	
	2.	6,812,047	11/2/04	Borden et al.	438	16	
	3.	5,966,019	10/12/99	Borden	324	752	
	4.	5,377,006	12/27/94	Nakata	356	349	
	5.	6,323,951	11/27/01	Borden et al.	356	502	
	6.	6,426,644	7/30/02	Borden et al.	324	765	
	7.	5,042,951	8/27/91	Gold et al.	356	369	
	8.	5,159,412	10/27/92	Willenborg et al.	356	445	
	9.	5,181,080	1/19/93	Fanton et al.	356	381	
	10.	5,228,776	7/20/93	Smith et al.	374	5	
	11.	4,255,971	3/17/81	Rosencwaig	73	606	
	12.	4,579,463	4/1/86	Rosencwaig et al.	374	57	
	13.	4,632,561	12/30/86	Rosencwaig et al.	356	432	
	14.	4,636,088	1/13/87	Rosencwaig et al.	374	5	
	15.	4,750,822	6/14/88	Rosencwaig et al.	324	445	
	16.	6,049,220	4/11/00	Borden et al.	324	765	
	17.	6,483,594	11/19/02	Borden et al.	356	502	
	18.	6,154,280	11/2/00	Borden	356	376	
	19.	6,054,868	4/25/00	Borden et al.	324	752	
	20.	5,883,518	3/16/99	Borden	324	752	
	21.	5,877,860	3/2/99	Borden	356	376	
	22.	5,978,074	11/2/99	Opsal et al.	356	72	
	23.	6,268,916	7/31/01	Lee et al.	356	432	
	24.	5,574,562	11/12/96	Fishman et al.	356	432	
	25.	6,169,601	1/2/01	Eremin et al.	356	240	

Examiner: Michael Trinh	Date Considered: 9/27/05
<p>* Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication with applicant.</p>	

3-25-05

Sheet 2 of 5

U.S. Department of Commerce, Patent and Trademark Office INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	Application No.:	10/813,407
	Filing Date:	March 29, 2004
	First Named Inventor:	Jiping Li
	Group Art Unit:	2811
	Examiner Name:	Unknown
	Confirmation No.:	5642
	Attorney Docket No.:	BOX016 US

MT	26.	3,803,413	4/9/74	Vanzetti et al.	250	338	
	27.	2002/0126732A1	9/12/02	Shakouri et al.	374	130	
	28.	6,327,035	12/4/01	Li et al.	356	432	
	29.	6,281,027	9/28/01	Wei et al.	438	14	
	30.	4,950,990	8/21/90	Moulder	324	224	
	31.	4,521,118	06/00/85	Rosencwaig	374	5	
	32.	5,074,669	12/1/91	Opsal	356	447	
	33.	3,909,602	9/30/75	Micka	716	4	
	34.	5,790,251	8/4/98	Hagiwara	356	351	
	35.	4,634,290	1/6/87	Rosencwaig	374	5	
	36.	4,522,510	6/11/85	Rosencwaig	374	7	
	37.	4,455,741	6/26/84	Kolodner	29	574	
	38.	4,466,748	8/21/84	Needham	374	129	
	39.	4,795,260	1/3/89	Schuur et al.	356	400	
	40.	6,559,942	5/6/03	Sui et al.	356	369	
	41.	6,528,333	3/4/03	Jun et al.	438	16	
	42.	3,462,602	8/16/67	Apple	250	83	
	43.	5,149,978	9/22/92	Opsal et al.	250	234	
	44.	6,400,454	6/4/02	Noguchi et al.	356	237	
✓	45.	4,679,946	7/14/87	Rosencwaig et al.	374	5	
MT	46.	6,694,284 B1	2/17/04	Nikoonahad et al.	702	155	

Foreign Patent Documents

							Translation	
		Document	Date	Country	Class	Subclass	Yes	No
MT	47.	0 718 595	20.12.95	EP	G01B	6-Nov		
MT	48.	2000 009443A	Jan-00	JP	G01B			
MT	49.	405006929A	Jan-93	JP	H01L	21/66		

Examiner: <u>Michael Trinh</u>	Date Considered: <u>9/27/05</u>
* Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication with applicant.	

3-25-05

Sheet 3 of 5

U.S. Department of Commerce, Patent and Trademark Office INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	Application No.:	10/813,407
	Filing Date:	March 29, 2004
	First Named Inventor:	Jiping Li
	Group Art Unit:	2811 2822
	Examiner Name:	Unknown
	Confirmation No.:	5642
	Attorney Docket No.:	BOX016 US

MT	50.	ISR PCT/ US99/12999	09.06.1999	WO	G01L	21/17		
	51.	ISR PCT/US03/06239	02.28.2003	WO	G01L	21/55		
	52.	ISR PCT/US01/07475	07.03.2001	WO				
MT	53.	ISR PCT/US03/06379	02.28.2003	WO	G01N	21/88		
Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)								
MT	54.	Paquin, "Properties of Metals", Handbook of Optics, Vol. II, McGraw-Hill, Inc. (month unavailable), 1995, pp. 35.3-35.7						
	55.	Rosencwaig et al. "Detection of Thermal Waves Through Optical Reflectance", Appl Phys. Lett. 46, June 1985, pp1013-1015						
	56.	Rosencwaig, "Thermal-Wave Imaging", SCIENCE, Volume 218, No. 4569, Oct. 1982, pp.223-228						
	57.	Opsal et al. "Thermal-Wave Detection and Thin-Film Thickness Measurements with Laser Beam Deflection", Applied Optics, Vol. 22, No. 20, Oct. 1983, pp. 3169-3176						
	58.	Rosencwaig, "Thermal Wave Characterization and Inspection of Semiconductor Materials and Devices", Chapter 5 (pp. 97-135) of Photoacoustic and Thermal Wave Phenomena in Semiconductors, North Holland (month unavailable) 1987						
	59.	J. Opsal, "High Resolution Thermal Wave Measurements and Imaging of Defects and Damage in Electronic Materials" Photoacoustic and Photothermal Phenomena II, Springer Series in Optical Sciences, Vol. 62, Springer Verlag Berlin, Heidelberg, (month unavailable) 1990.						
	60.	J. Kolzer et al "Thermal Imaging and Measurement Techniques for Electronic Materials and Devices" Microelectronic Engineering, vol. 31, 1996 (month unknown) pages 251-270						
	61.	C. Martinsons et al. "Recent progress in the measurement of thermal properties of hard coatings" Thin Solid Films, vol. 317, April 1998, 455-457.						
	62.	S. Wolf and R. N. Tauber, "Silicon Processing For The VLSI Era", Volume 1, 1986, pages 388-399						
	63.	Yaozhi Hu and Sing Pin Tay, "Spectroscopic ellipsometry investigation of nickel silicide formation by rapid thermal process", J. Vac. Sci. Technology, American Vacuum Soc. May/Jun 1998, pages 1820-1824						
	64.	Bristow, Thomas C. and Dag Lindquist, "Surface Measurements With A Non-Contact Nomarski-Profilng Instrument", Interferometric Metrology, SPIE vol. 816, August 1987, pages 106-110						
	65.	Charles Kittel, "Introduction to Solid State Physics", Fourth Edition, John Wiley & Sons, published prior to March 1, 2002, pages 262-264						
	66.	Rolf E. Hummel, "Electronic Properties of Materials, An Introduction For Engineers", published prior to March 1, 2002, pages 137-145						
	67.	H.S. Carslaw and J.C. Jaeger, "Conduction of Heat In Solids", Second Edition, published prior to March 1, 2002, pages 64-66						
MT	68.	A. Rosencwaig, "Thermal Wave Measurement of Thin-Film Thickness", 1986 American Chemical Society, pp.182-191						

Examiner: Michael Trinh	Date Considered: 9/27/05
* Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication with applicant.	

3-25-05

U.S. Department of Commerce, Patent and Trademark Office INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	Application No.:	10/813,407
	Filing Date:	March 29, 2004
	First Named Inventor:	Jiping Li
	Group Art Unit:	2841 <i>2822</i>
	Examiner Name:	Unknown
	Confirmation No.:	5642
	Attorney Docket No.:	BOX016 US

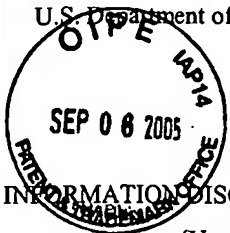
<i>MT</i>	69.	A. Rosencwaig et al., "Thin-Film Thickness Measurements with Thermal Waves", Journal De Physique, October 1983, pp. C6-483 - C6-489
	70.	S. Ameri et al., "Photo-Displacement Imaging", March 30, 1981, pp. 337-338
	71.	L. Chen et al., "Thermal Wave Studies of Thin Metal Films Using the Meta-Probe-A New Generation Photothermal System" 25th Review of Progress in QNDE, Snowbird, UT 19-24 July, 1998, pp 1-12
	72.	P. Alpern and S. Wurm, "Modulated Optical Reflectance Measurements on Bulk Metals and Thin Metallic Layers", J. Appl. Phys. 66(4), 15 August 1989, pp 1676-1679
	73.	J. Opsal, "The Application of Thermal Wave Technology to Thickness and Grain Size Monitoring of Aluminum Films", SPIE Vol. 1596 Metalization Performance and Reliability Issues for VLSI and ULSI (1991), pp 120-131
	74.	A. Rosenwaig, "Process Control In IC Manufacturing With Thermal Waves", Review of Progress in Quantitative Nondestructive Evaluation, Vol.9, 1990, pp 2031-2037
	75.	K. Farnaam, "Measurement of Aluminum Alloy Grain Size on Product Wafers and its Correlation to Device Reliability", 1990 WLR Final Report, pp 97-106
	76.	B.C. Forget et al., "High Resolution AC Temperature Field Imaging", Electronic Letters 25th September 1997, Vol. 33 No. 20, pp 1688-1689
	77.	C. Paddock et al., "Transient Thermoreflectance from Metal Films", May 1986 Vol. 11, No. 5 Optical Letters, pp 273-275
	78.	C. Paddock et al., "Transient Thermoreflectance from Metal Films", J. Appl. Phys. 60(1), 1 July 1986, pp 285-290
	79.	Per-Eric Nordail et al. "Photothermal Radiometry", Physica Scripta, Vol. 20, 659-662, 1979
	80.	A. Rosenwaig, "Thermal Wave Monitoring and Imaging of Electronic Materials and Devices", pp 73-109
	81.	A. Rosenwaig, "Applications of Thermal-Wave Physics to Microelectronics", VLSI Electronics, Microstructure Science Vol. 9, 1995, pp 227-288
	82.	W. Lee Smith et al., "Voids, Notches and Microcracks in Al Metallization Detected by Nondestructive Thermal Wave Imaging", June 23rd 1989, pp. 211-221
	83.	W. Lee Smith et al., "Imaging of Subsurface Defects in ULSI Metalization (Al Voids SI Precipitates, Silicide Instability) and SI Substrates (D Defects), Technical Proceedings Simicon/Japan 1992, Nippon Convention Center, Japan pp 238-246
	84.	W. Lee Smith, "Nondestructive Thermal Wave Imaging of Voids & Microcracks in Aluminum Metallization", 1989 WLR Final Report, pp 55-68
	85.	W. Lee Smith, "Direct Measurement of Stress-Induced Void Growth by Thermal Wave Modulated Optical Reflectance Imaging", 1991 IEEE/IRPS, pp 200-208
<i>✓</i>	86.	W. Lee Smith, "Evaluating Voids and Microcracks in Al Metalization", Semiconductor International, January 1990, pp 232 -237
<i>MT</i>	87.	C. G. Welles et al., "High-Resolution Thermal Wave Imaging of Surface and Subsurface Defects in IC Metal Lines", Materials Research Society, SF Marriott, April 27-May 1, 1992, pp 1187-1191

Examiner: <i>Michael Trish</i>	Date Considered: <i>9/27/05</i>
* Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication with applicant.	

U.S. Department of Commerce, Patent and Trademark Office INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	Application No.:	10/813,407
	Filing Date:	March 29, 2004
	First Named Inventor:	Jiping Li
	Group Art Unit:	2811
	Examiner Name:	Unknown
	Confirmation No.:	5642
	Attorney Docket No.:	BOX016 US

MT	88.	J. A. Batista et al., "Biased MOS-FET and Polycrystalline Silicon Tracks Investigated by Photothermal Reflectance Microscopy", pp 468-469
	89.	L. Chen et al., "Meta-Probe: A New Generation Photothermal System For Thin Metal Films Characterization" (believed to be prior to March 1, 2002)
	90.	L. Chen et al., "Thermal Wave Studies of Thin Metal Films and Structures", (believed to be prior to March 1, 2002)
	91.	9th International Conference on Photoacoustic and Photothermal Phenomena Conference Digest, June 27-30, 1996 Nanjing, P.R. China, pp 81
	92.	R. S. Sharpe, "Research Techniques in Nondestructive Testing Vol. VII, Academic Press 1984, pp 158-365
	93.	R. L. Thomas et al., "Thermal Wave Imaging For Nondestructive Evaluation" 1982 Ultrasonic Symposium, pp 586-590
	94.	G. Slade Cargill III, "Electron-Acoustic Microscopy", Physics Today, October 1981, pp 27-32
	95.	A. Rosencwaig, "Thermal Wave Microscopy", Solid State Technology, March 1982, pp 91-97
	96.	Eric A. Ash, "Acoustical Imaging" Volume 12, Plenum Press, July 19-22, 1982, pp 61-65
	97.	US Appl. No. 09/095,805 entitled "Apparatus and Method For Measuring A Property of a Layer in a Multilayered Structure"
	98.	US Appl. No. 10/722,724 entitled "Apparatus and Method For Measuring A Property of a Layer in a Multilayered Structure"
	99.	US Appl. No. 10/090,316 entitled "Apparatus and Method For Measuring A Property Of A Layer In A Multilayered Structure"
	100.	US Appl. No. 09/521,232 entitled "Evaluating A Property Of A Multilayered Structure"
	101.	US Appl. No. 10/977,380 entitled "Evaluating A Property Of A Multilayered Structure"
	102.	US Appl. No. 09/788,273 entitled "Evaluating Sidewall Coverage In A Semiconductor Wafer"
	103.	US Appl. No. 10/090,262 entitled "Evaluating A Multilayered Structure For Voids"
	104.	US Appl. No. 10/984,463 entitled "Evaluating A Multilayered Structure For Voids"
	105.	US Appl. No. 10/090,287 entitled "Identifying Defects In A Conductive Structure Of A Wafer, Based On Heat Transfer Therethrough"
MT	106.	US Appl. No. 10/979,397 entitled "Evaluation Of Openings In A Dielectric Layer"

Examiner: Michael Trind	Date Considered: 9/27/05
* Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication with applicant.	

U.S. Department of Commerce, Patent and Trademark Office  INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	Application No.:	10/813,407
	Filing Date:	March 29, 2004
	First Named Inventor:	Jiping Li
	Group Art Unit:	2822
	Examiner Name:	Trinh
	Confirmation No.:	5642
	Attorney Docket No.:	BOX016 US

U.S. Patent Documents

*Examiner Initials		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
MT	107	6,040,936	3/21/01	Kim et al.	359	245	
	108	6,720,248	4/13/04	Ryo	438	622	
	109	6,747,355	6/8/04	Abiru	257	758	
	110	4,873,434	10/10/89	See et al.	250	235	
	111	6,541,747 B1	4/1/03	Kikuchi et al.	250	201	
	112	2002/0167326 A1	11/14/02	Borden et al.	324	752	
	113	2003/0165178 A1	9/4/03	Borden et al.	374	5	
	114	6,387,715	5/14/02	David et al.	438	16	
	115	2001/0017878 A1	8/30/01	Nozoe et al.	374	7	
	116	6,330,361	12/11/01	Mitchell et al.	382	211	
	117	4,201,087	5/6/80	Akita et al.	73	339	
	118	6,178,020	1/23/01	Schultz et al.	359	107	
	119	5,128,864	7/7/92	Waggener et al.	364	413	
MT	120	5,304,931	4/19/94	Flamig et al.	324	309	
Other Art (Including Author, Title, Date, Pertinent Pages, Etc.)							
MT	121	J.M. Ziman, F.R.S., "Principles of the Theory of Solids", 2nd Edition, Cambridge At the University Press 1972, pp 278-282					
	122	Chung Wah See and Mehdi Vaez-Iravani, "Differential amplitude scanning optical microscope: theory and applications", Applied Optics Vol. 27, No. 13, July 1, 1988, pp 2786-2792					
	123	International Search Report in PCT/US03/06250 which claims priority of US Application 10/090,287					
	124	Written Opinion in PCT/US99/12999 which claims priority of US Application 09/095,805					
MT	125	Communication Relating To Results of Partial International Search in PCT/US05/009588, which claims priority of US Application 10/813,407 (<i>current application</i>)					

Examiner: <u>Michael Trinh</u>	Date Considered: <u>9/27/05</u>
* Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication with applicant.	